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1742

IN THE US PATENT AND TRADEMARK OFFICE

August 10, 2004

Applicants: George D. Chandley, et al.

Title : TITANIUM ALUMINIDE MATERIAL RESISTANT TO
MOLTEN ALUMINUM

Serial No.: 09/740,708

Group: 1742

Filed : December 19, 2000

Examiner: Morillo

Confirmation No. 5022

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

APPELLANT'S REPLY BRIEF

Dear Sir:

A) The examiner's Answer mailed July 14, 2004, includes on page 5 a paragraph entitled "Prolong resistance to attack" with which Applicants adamantly disagree as follows:

The examiner alleges in the paragraph that increasing the high temperature strength by adding Y as taught by the Nazmy reference to the TiAl alloy taught by the WO '973 reference would prolong resistance to attack of the alloy by molten aluminum because the alloy has greatly increased heat resistance/high temperature strength at temperature where aluminum is in the molten state.

However, Applicants note that the '442 patent teaches absolutely nothing with respect to Applicants' claimed methods set forth in claims 10-15 and 21-24 wherein resistance to attack of a titanium aluminide alloy by molten metallic material comprising aluminum is prolonged by inclusion of a rare earth element in the titanium aluminide alloy.

The determination of mechanical properties, such as hardness and tensile strength, in an air environment as taught in the '442 patent teaches absolutely nothing about the resistance of the titanium alloys to attack by contact with a molten metallic material comprising aluminum. Nowhere in the WO '973 document or the '442 patent is there any disclosure or suggestion of a method of increasing the service life of a titanium aluminide alloy in contact with a molten metallic material comprising aluminum by including in the titanium aluminide alloy a rare earth element in an effective amount to prolong resistance to attack of the alloy by the molten metallic material.

The examiner's argument using mechanical property test data determined for titanium aluminide alloys in air to extrapolate or predict the effect of an alloying element, such as a rare earth element, on resistance of a titanium aluminide alloy to attack by molten metallic material comprising aluminum amounts to mere speculation and ignores fundamental differences between the mechanisms of reaction of an alloy in air and attack of the alloy by molten metallic material comprising aluminum.

Applicants' claims 10-15 and 21-24 describe methods which are not known from the WO' 973 document or the '442 patent taken alone or together. There simply is no teaching in the '442 patent that would lead one skilled in the art to arrive at Applicants' claimed method.

B) The examiner's Answer mailed July 14, 2004, also includes on page 4 a paragraph entitled "Motivation to select Y" with which Applicants adamantly also disagree as follows:

The examiner alleges in the paragraph that the Nazmy reference teaches strong motivation to select Y for addition to the WO '973 reference.

However, the examiner's selecting only Y as the alloying element from the '442 patent for inclusion in the '973 document out of the numerous alloying elements listed in the '442 patent is purely speculative with respect to Applicants' claims. For example, the '442 patent lists Co, Cr, Ge, Hf, Mn, Mo, Nb, Pd,

Ta, V, W, Y, and/or Zr as alloying elements to improve hardness and strength in air testing. The examiner picks only the Y alloying element from among those listed to reject Applicants' claims 10-15 and 21-24 without any teaching in the '442 patent that Y or any of the other numerous alloying elements listed would have an effect of any kind on the alloy with respect to attack by a molten metallic material comprising aluminum.

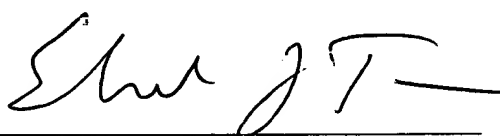
As discussed above, the examiner's arguments using mechanical property test data determined for titanium aluminide alloys in air to extrapolate or predict the effect of an alloying element, such as a rare earth element, on resistance of a titanium aluminide alloy to attack by molten metallic material comprising aluminum amounts to mere speculation and ignores fundamental differences between reaction of an alloy in air and attack of the alloy by molten metallic material comprising aluminum.

Applicants believe the examiner's arguments in support of the Section 103(a) rejection of claims 10-15 and 21-24 are speculative, hindsight in nature, and incorrect.

Applicants request entry of this Reply Brief.

Respectfully submitted,

IN TRIPLICATE

A handwritten signature in black ink, appearing to read "Edward J. Timmer", written over a horizontal line.

Edward J. Timmer No. 27402

Encl. Post card